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UNITED STATES PATENT AND TRADEMARK OFFICE

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Ex parte

CHARLES FREDERICK SCHROER, JR.,
GLENN ERNEST GLASSCOCK, CHARLES AUGUSTUS HART,
JOHN L. MOODY, MEREDITH GAYE THARP
and JASON BRIAN WOODARD

Appeal 2007-0808
Application 10/612,601
Technology Center 3700

DECIDED: March 13, 2008

Before TONI R. SCHEINER, ERIC GRIMES, and RICHARD M.
LEBOVITZ, *Administrative Patent Judges*.

SCHEINER, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134 from a final rejection of claims 1-48 as obvious over the prior art. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

STATEMENT OF THE CASE

“The present invention relates to an absorbent article, such as a disposable diaper, that improves leg gather formation in the leg opening regions, thus providing a better fitting, less irritating absorbent article capable of preventing lateral leakage” (Spec. ¶ 10). According to Appellants, “[t]his is accomplished by reducing the amount of liquid-impervious material used in the manufacture of the absorbent article, such that only liquid-pervious material . . . exists in the leg opening regions” (Spec. ¶ 10), so that “zones of reduced stiffness and continuous breathability . . . surround[] the wearer’s legs” (Spec. ¶ 11).

Claim 1 represents the invention in its broadest aspect, and reads as follows:

1. An absorbent article having a longitudinal axis, a lateral axis, a longitudinal length, a lateral width, longitudinal end edges and lateral side edges, a front waist region, a rear waist region, an intermediate crotch region interconnecting the front and rear waist regions, and a pair of leg openings on the lateral sides of the crotch region, the article further comprising:
 - a liquid-pervious backsheet;
 - a liquid-pervious topsheet;
 - a pair of liquid-pervious barrier cuffs bonded to the topsheet;
 - an absorbent core disposed between the topsheet and the backsheet;
 - a liquid-impervious barrier layer disposed between the absorbent core and the backsheet; and
 - leg elastic members located in at least a portion of the crotch region adjacent to the leg openings;wherein the barrier layer is not present in the portion of the article where the leg elastic members are located, the barrier layer does not wrap around the core, and the barrier cuffs and the backsheet extend past lateral edges of the barrier layer and terminate at the lateral side edges of the absorbent article.

THE ISSUE ON APPEAL

Claims 1-48 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Saisaka (U.S. Patent 5,624,424, April 29, 1997), Igaue (U.S. Patent 4,904,251, February 27, 1990), Lawson (U.S. Patent 4,743,246, May 10, 1988), and Foreman (U.S. Patent 4,738,677, April 19, 1988).

According to the Examiner, “Saisaka includes or obviously include[s] all the claimed structure except for the [barrier] cuffs terminating at the side edges of the article” (Ans. 4). In other words, “Saisaka shows the [barrier] cuffs terminating at the point where they extend past the respective side edge[s] of the barrier layer, i.e., the portion of the [barrier] cuff attached is turned inwardly” (Ans. 4).

Nevertheless, the Examiner contends that it would have been obvious for one of skill in the art “to make the cuff of Saisaka a cuff which terminates at the side edge of the article as claimed” (Ans. 4) because Igaue, Lawson, and Foreman “teach[] interchangeability of a cuff as claimed for that such as taught by Saisaka” (Ans. 4).

Appellants contend that “the layers of material forming the [claimed] diaper are arranged so the area surrounding the wearer’s thighs includes only the backsheet and barrier cuffs” so that “[n]o liquid-impervious material . . . is present within these breathable zones” (App. Br. 9), but the barrier cuffs of Saisaka, Igaue, Lawson, and Foreman are made of material that “is not stretchable and is liquid impermeable” (App. Br. 13). Thus, turning the barrier cuffs outwardly, as proposed by the Examiner, would result in a diaper with liquid-impervious material in the leg opening areas, in contrast to the claimed diaper. In addition, Appellants contend that Saisaka is

directed to an absorbent article that has side liner portions formed from a specific stretchable, moisture-permeable composite “critical to providing an absorbent article with a satisfactory fit” and comfort (App. Br. 12), thus, one of skill in the art would not have been motivated to modify Saisaka by turning the barrier cuffs outwardly because this would obscure the composite material and “render the absorbent article of Saisaka . . . unsatisfactory for its intended purpose” (App. Br. 13).

The issue raised by this appeal, then, is whether the claimed absorbent article, with outwardly turned barrier cuffs, and no liquid-imperious materials in the leg opening region, would have been obvious to one of ordinary skill in the art, given the scope and content of the prior art; the level of ordinary skill in the art; the differences between the claimed invention and the prior art; and secondary considerations of nonobviousness, if any.

FINDINGS OF FACT¹

1. Figure 4 of the present Specification is reproduced immediately below:

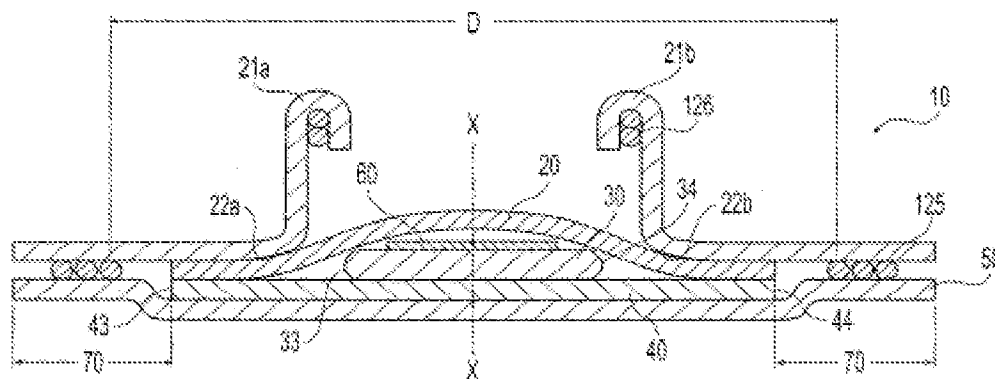


Fig. 4

¹ Abbreviated “FF”.

Figure 4 depicts a cross sectional view of a disposable diaper **10**.

Essentially, diaper **10** comprises, from the skin-facing side outwardly, along the line X---X, a liquid-pervious topsheet **20**, an absorbent core **30**, a liquid impervious barrier layer **40**, a liquid-pervious backsheet **50**, and leg elastics **125** (Spec. ¶¶ 11, 13, 31, 32). The diaper also comprises a pair of liquid-pervious barrier cuffs **21a** and **21b**, and leg opening regions corresponding to the regions labeled **70** on the right- and left-hand sides of the figure.

2. As shown in Figure 4, barrier cuffs **21a** and **21b** are bonded to the top sheet **20** in the regions labeled **22a** and **22b**, and extend past the lateral edges of barrier layer **40** and terminate at the lateral side edges of the diaper (i.e., leg opening regions **70**). That is, the barrier cuffs are “turned outwardly.”

3. “[T]he layers of material forming the diaper **10** are arranged so the area surrounding the wearer’s thighs includes only the backsheet **50**, barrier cuffs **21a**, **21b** and leg elastics **125**. No liquid-impervious material is present within the breathable zones of reduced stiffness **70**” (Spec. ¶ 32). This is reflected in the language of claim 1, which specifies that the liquid-impervious barrier layer is not present in the portion of the article where the leg elastic members are located, and the liquid-pervious barrier cuffs and the liquid-pervious backsheet extend past the lateral edges of the barrier layer and terminate at the lateral side edges of the absorbent article. Thus, there is no liquid-impervious material in the leg opening regions.

Saisaka

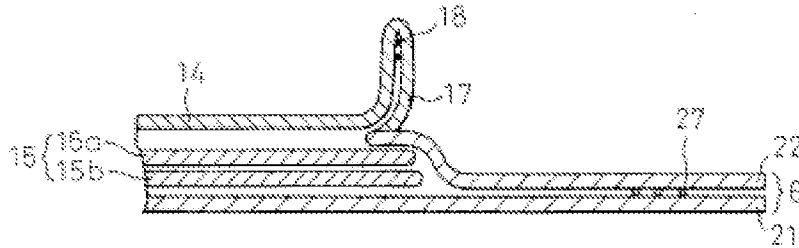
6. “[T]he outermost sheet layer may [also] consist of the composite sheet” (Saisaka, col. 10, ll. 61-63). However, “[t]he composite sheet for the outermost sheet consists of an elastic sheet ply capable of expansion . . . in the transverse direction of the diaper and at least one non-elastic sheet ply laminated on at least one surface of the elastic sheet ply . . . The elastic sheet ply is non-porous and liquid non-permeable, and serves as a liquid non-permeable back sheet layer” (Saisaka, col. 11, ll. 3-10).

7. “In FIG. 5, the flap **17** is located inside of the elastic member **27** arranged in the crotch section **6**. The flap **17** comprises a laminate sheet consisting of a liquid non-permeable sheet **29**, for example, polypropylene or polyethylene sheet, a nonwoven fabric **30** . . . and an elastic member **18**. The nonwoven fabric **30** is laminated on the liquid non-permeable sheet **29** so as to form an outside face of the flap **17** . . . This type of flap has a good touch feeling, satisfactory softness and a good fit to the wearer” (Saisaka, col. 10, ll. 14-27).

8. “The lower end portion of the laminate [forming flap **17**] is inserted and fixed between the liquid absorbent member **3** and the side liner sheet **22**” (Saisaka, col. 10, ll. 27-29). That is, flap **17** is “turned inwardly.”

9. Saisaka also describes an embodiment wherein flap **17** is liquid-pervious, as illustrated in Figure 7, reproduced immediately below:

Fig. 7



Saisaka's Figure 7 is a "transverse cross-sectional partial view of [an] underpants type disposable diaper" (Saisaka, col. 3, ll. 51-52). "[F]lap 17 is formed from the same liquid permeable sheet as that for the top sheet 14" and "[t]he inside edge portion of the side liner sheet layer 22 is inserted between the liquid absorbent pad layer 15 and the top sheet 14 so as to cover the outside edge portions of the liquid absorbent pads 15a and 15b" (Saisaka, col. 11, ll. 35-43). As shown in Figure 7, flap 17 turns inwardly in this embodiment as well.

10. Thus, Saisaka describes a diaper with liquid-impervious flaps 17 bonded to a liquid-pervious topsheet 14, wherein the flaps 17 are turned inwardly (as illustrated in Figure 5); Saisaka also describes a diaper with liquid-pervious flaps 17 that are simply extension of the liquid-permeable topsheet 14, also folded inwardly (as illustrated in Figure 7).

11. Saisaka does not describe a diaper wherein the leg opening area contains only breathable, liquid pervious materials (*see* FF 6).

Igaue

12. Igaue describes several embodiments of a disposable diaper with barrier cuffs (designated "second flap 17"): one with barrier cuffs turned inwardly, as shown in Figure 14; one with barrier cuffs turned outwardly, but not extending to the lateral side edges of the diaper, as shown in Figure

13; and one with barrier cuffs turned outwardly, and extending to the lateral side edges, as shown in Figure 6.

13. In all of Igaue's embodiments, "[t]he second flap **17** is made of an air-permeable and water-proof sheet, preferably of fibrous nonwoven fabric which has been subjected to water-proofing with silicone resin" (Igaue, col. 4, ll. 49-52).

14. Backsheet **12** is "water-impermeable" and its width defines the lateral side edges of the diaper (Igaue, col. 3, ll. 35-44).

15. Water-impermeable backsheet **12** extends to the lateral side edges of the diaper, and flap **17**, when present at the side edges, is water-proof as well, thus, Igaue does not describe a diaper wherein the leg opening area contains only breathable, liquid pervious materials (FF 13, 14).

Lawson

16. Lawson describes disposable diapers in which barrier cuffs **62** are turned outwardly, and may or may not extend to the lateral side edges (Lawson, Figures 3 and 7). The barrier cuffs may be permeable (Lawson, col. 9, ll. 11-13) or non-permeable (Lawson, col. 10, ll. 51-52).

17. Lawson's "backsheet **42** is impervious to liquids and is preferably manufactured from a thin plastic film" (Lawson, col. 6, ll. 44-45). "The backsheet **42** prevents the exudates absorbed and contained in the absorbent core **44** from wetting articles which contact the diaper" (Lawson, col. 6, ll. 47-49).

18. Backsheet **42** "extend[s] beyond the absorbent core **44** a minimum distance of at least about 1.3 cm to about 2.5 cm . . . around the entire diaper periphery **28**" (Lawson, col. 6, l. 66 to col. 7, l. 4).

19. Liquid-impervious backsheet **42** extends to the lateral side edges of the diaper, thus, Lawson does not describe a diaper wherein the leg opening area contains only breathable, liquid pervious materials (FF 17, 18).

Foreman

20. Foreman describes a disposable diaper in which barrier cuffs **62** are turned outwardly, and extend to the lateral side edges of the diaper (Foreman, Figure 2). The barrier cuffs are preferably liquid impermeable (Foreman, col. 13, ll. 15-19), but the flap portion of the barrier cuffs that extends to the lateral side edges of the diaper “need not be liquid impermeable” (Foreman, col. 11, ll. 27-28).

21. Foreman’s “backsheet **42** is impervious to liquids and is preferably manufactured from a thin plastic film” (Foreman, col. 8, ll. 42-43). “The backsheet **42** prevents the exudates absorbed and contained in the absorbent core **44** from wetting articles which contact the diaper” (Foreman, col. 8, ll. 45-47).

22. Backsheet **42** “extends beyond the edges of the absorbent core **44** to thereby form the periphery **28** of the diaper **20**. The periphery **28** defines the outer . . . edges of the diaper **20** (Foreman, col. 4, ll. 7-10).

23. Liquid-impervious backsheet **42** extends to the lateral side edges of the diaper, thus, Foreman does not describe a diaper wherein the leg opening area contains only breathable, liquid pervious materials (FF 21, 22).

DISCUSSION

The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the

claimed invention and the prior art; and (4) secondary considerations of nonobviousness, if any. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). “Often, it will be necessary . . . to look to interrelated teachings of multiple [references] . . . and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed” (*KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740-41 (2007)), taking into account “the inferences and creative steps that a person of ordinary skill in the art would employ” (*id.* at 1741). “[T]his analysis should be made explicit” (*id.*), and it “can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does” (*id.*).

As discussed above, the claimed invention is directed to an absorbent article, such as a disposable diaper, that has no liquid-impervious material in the leg opening regions (FF 3), which, according to Appellants, provides “a better fitting, less irritating absorbent article capable of preventing lateral leakage” (Spec. ¶ 10). The prior art describes absorbent articles with either inwardly or outwardly turned barrier cuffs, and also describes articles with either liquid-pervious or liquid-impervious barrier cuffs (Lawson, in particular, describes a diaper with a liquid-pervious, outwardly turned barrier cuff) (FF 7-10, 12, 13, 16, 20). Thus, we agree with the Examiner that inwardly and outwardly turned, liquid-pervious and liquid-impervious barrier cuffs were interchangeable in the art, and it would have been obvious for one of ordinary skill in the art to substitute one for another.

However, all of the cited references describe diapers with liquid-impervious backsheets that extend to, and terminate at, the lateral edges of the diapers (FF 6, 11, 14, 15, 17-19, 21-23). The purpose of a liquid impervious backsheet, which extends into the leg opening regions of the diapers, is to contain exudates and prevent them from wetting articles which contact the diaper (FF 17, 21). Given the fact that all of the cited references describe diapers with liquid-impervious materials in the leg opening regions, the Examiner has not established that absorbent articles with *no* liquid-impervious materials present in the leg opening regions are conventional in the art, nor has the Examiner explained why one of skill in the art would have had a reason to exclude liquid-impervious material from the leg opening regions, as required by the claims (FF 3).

Accordingly, the Examiner's rejection of claims 1-48 under 35 U.S.C. § 103(a) as unpatentable over Saisaka, Igaue, Lawson, and Foreman is reversed.

REVERSED

saj

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Application 10/612,601

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